in an antimalarial efficacy study of intravenous artesunate in combination with methylene blue in a *P. cynomolgil* rhesus monkey model of uncomplicated malaria.

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Abstract of the Joint International Tropical Medicine Meeting (JITMM). Bangkok, Thailand. 29 November-1 December 2004:264. (Poster)

PLASMODIUM FALCIPARUM-BASED BIOASSAY FOR MEASUREMENT OF ARTEMISININ DERIVATIVES IN PLASMA OR SERUM

Teja-Isavadharm P, Peggins JO, Brewer TG, White NJ, Webster HK and Kyle DE

Artemisinin and its derivatives, artesunate and artemether, are rapidly acting antimalarials that are used for the treatment of severe and uncomplicated multidrug-resistant falciparum malaria. To optimize treatment regimens that use this new class of antimalarials, there is a need for readily available and reproducible assays to monitor drug levels closely in patients. A sensitive and reproducible bioassay for the measurement of the concentrations of artemisinin derivatives in plasma and serum is described. By modifying the in vitro drug susceptibility test, it was found that antimalarial activity in plasma or serum containing an unknown concentration of drug could be equated to the known concentrations of dihydroartemisinin (DHA) required to inhibit parasite growth. Dose-response curves for a *Plasmodium falciparum* clone (clone W2) and DHA were used as a standard for each assay. Assays with plasma or serum spiked with DHA proved to be reproducible (coefficient of variation, ≤10.9%), with a lower limit of quantitation equivalent to 2.5 ng of DHA per ml. For plasma spiked with artesunate or artemether, there was good agreement of the results obtained by the bioassay and the concentrations measured by high-performance liquid chromatography (HPLC) with electrochemical detection. The bioassay for measurement of the antimalarial activities of artemisinin derivatives in body fluids requires a smaller volume of plasma or serum and is more sensitive than the presently available HPLC methods, can provide pharmacodynamic parameters for determination of activity against the parasite, and should enhance the design of more appropriate dosage regimens for artemisinin drugs.

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